FORCEnet
engineering conference
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Open Architecture & SNSC2

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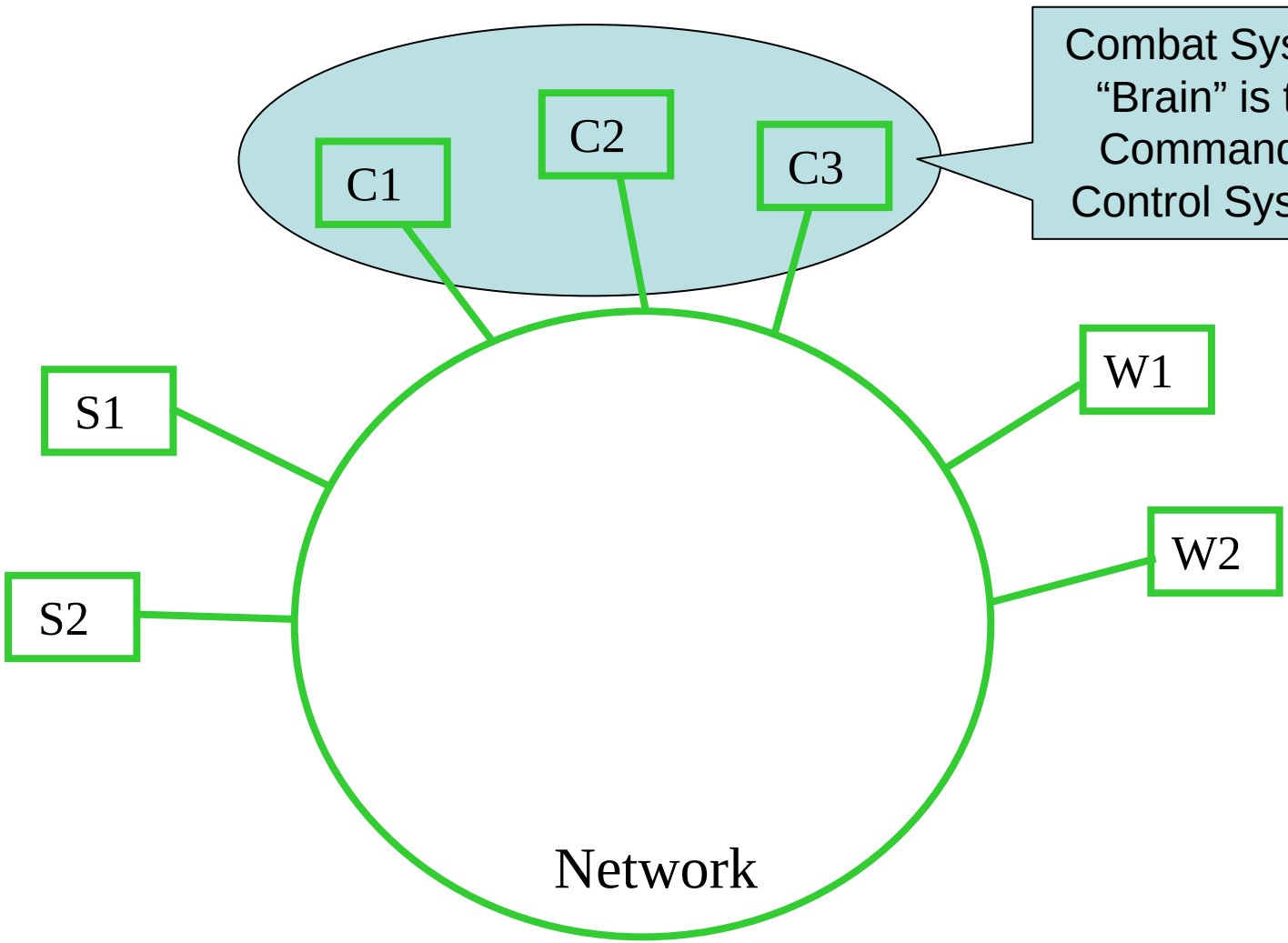
Sponsored by
SPAWARSYSCOM
FORCEnet Chief Engineer

Purpose

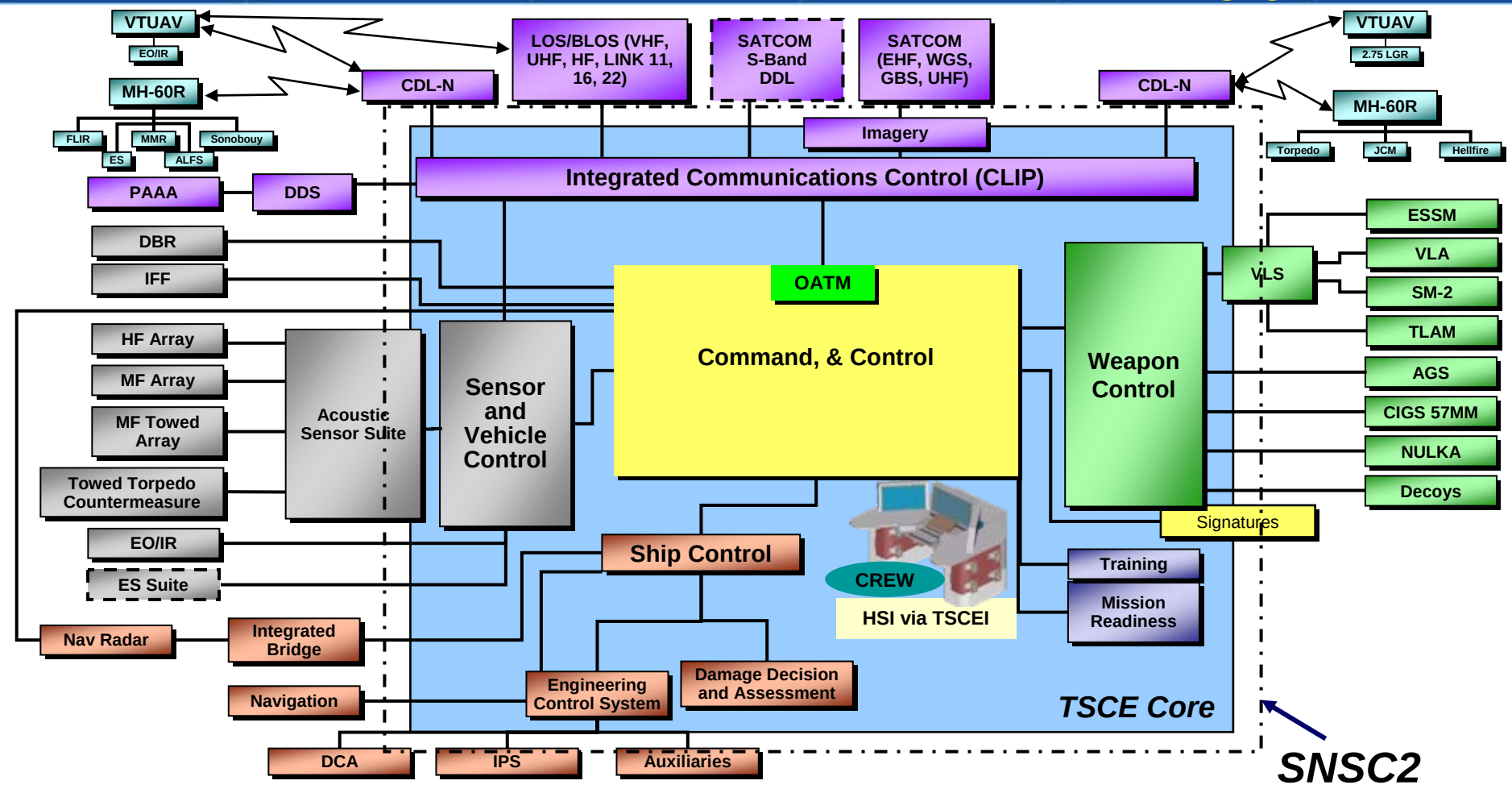
- Clarify Cost of COTS / Tech Refresh and OA Implementation / Refresh
- Illustrate Surface Navy Standard C2 / OA Strategy
- Explain Role of Common Component-Based Library Within OA Strategy

Simple C2 System

Logical / Physical View



SNSC2 DD(X) Architectural Basis



Leverage DD(X) investment for Forward Fit & Backfit

COTS Refresh vs. OACE Refresh

- Navy Transition to COTS Based on Congressional Mandates in 1994 and 1995 *
- COTS Refresh is a Fact of Life Today that was not Well Understood When Mandated
- OA Implementation Path Provides Cost, Schedule, and Upgradeability Advantages Over COTS / Tech Refresh

* "…Secretary of Defense William Perry directed in June 1994 that DoD acquisitions should make maximum use of performance specifications and commercial standards, thus increasing the opportunities to make use of commercial products. This was followed by the Federal Acquisition Streamlining Acts of 1994 and 1995 from Congress, which directed the increased use of commercial items…"

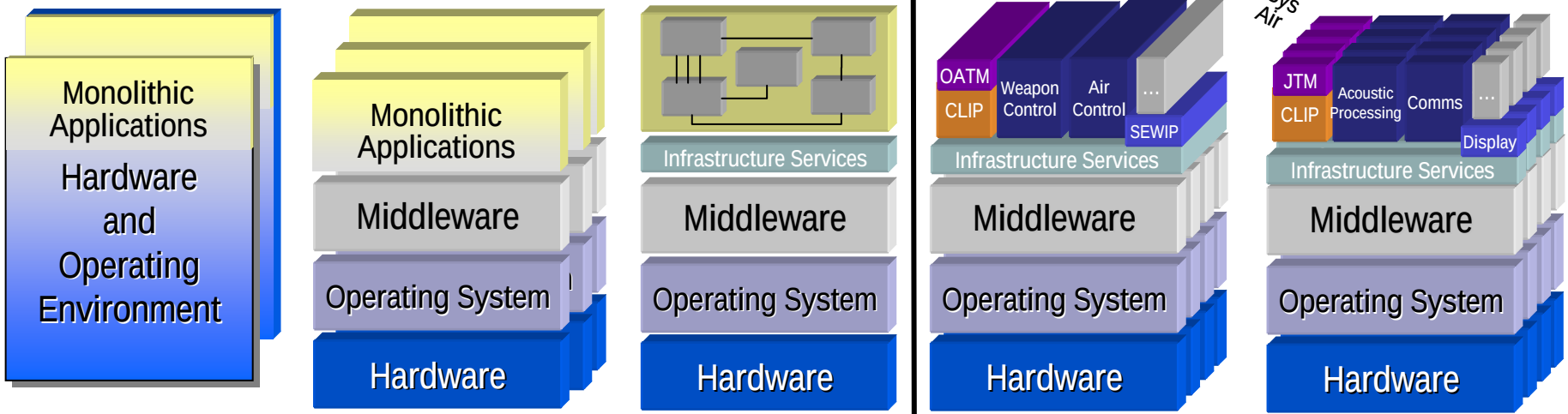
What are the OA End States?

OA Category Criteria

- Standards-Based Computing Environment
  - OA Category 3
  - Hardware / Software Independence
- Application Software Component Reuse
  - OA Category 4
  - Modular Code with Consistent Interfaces
  - Common Application Services (TSCE-I)
- Working to Align These Standards w/ Fn Guidance

Evolutionary States of Surface Domain OA

Non-OA	Category 3	Category 4 Open	Category 4 Common	Category 4 Enterprise
"Closed"	"Layered"	"Layered & Open"	"Common"	"Enterprise / Joint"



- "Unglue the Stack"
- H/W & Software Isolation

- Modular Applications
- Opens Up Vendor Base
- Prime Owns Arch

- Cross-Program Apps
- Mixed Developer Base
- Gov't Owns Arch

- Cross-Domain Apps
- Mixed Developer Base
- Gov't Owns Arch

OA RETURNS

- COTS Refresh Cost Avoidance
- Ease of Warfighting Upgrades
- Enables Competition
- Reduce Development & Maintenance Costs
- Reduce Development
- Enables Interoperability

Program Manager Control ⟵ ⟶ **PM Interdependencies**

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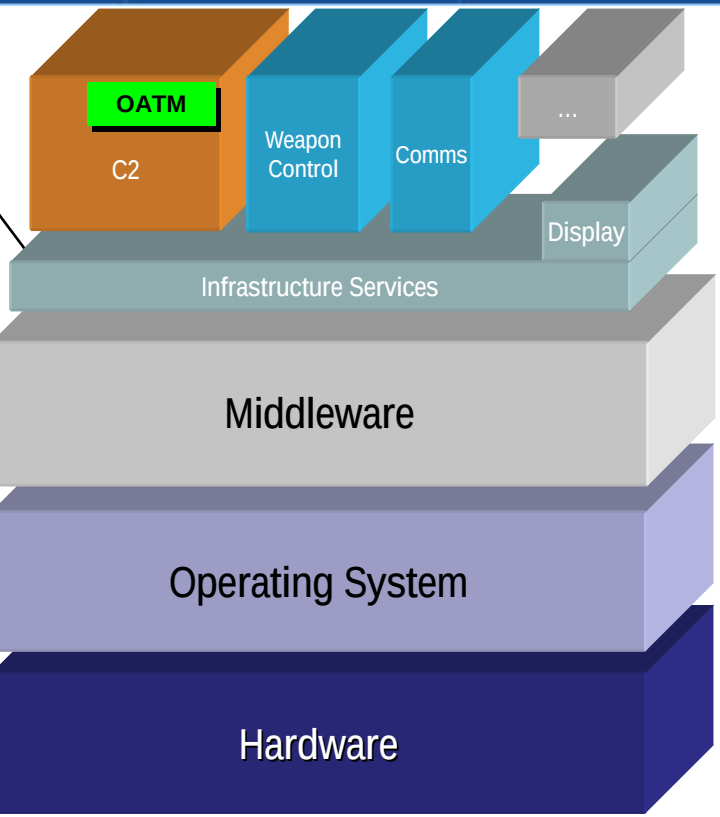
SNSC2 Layered Architectural Approach

Infrastructure:

- ***Common Services and APIs***
- ***Flexibility to Support Forward-Fit and Back-Fit***



Applications:

- ***Common Reusable Components***
- ***Platform Specific Components***

OACE CAT-3:

- ***Standards-based Interfaces***
- ***Commercial Mainstream Products and Technologies***

Total Ship Computing Environment (TSCE-I)

Focus:

- OA CAT-3 Compliant Environments on Aegis, DD(X) and SSDS
- Adopt DD(X) TSCE-I Across Programs as Standard Infrastructure
- Maximize Application Reuse Across Programs

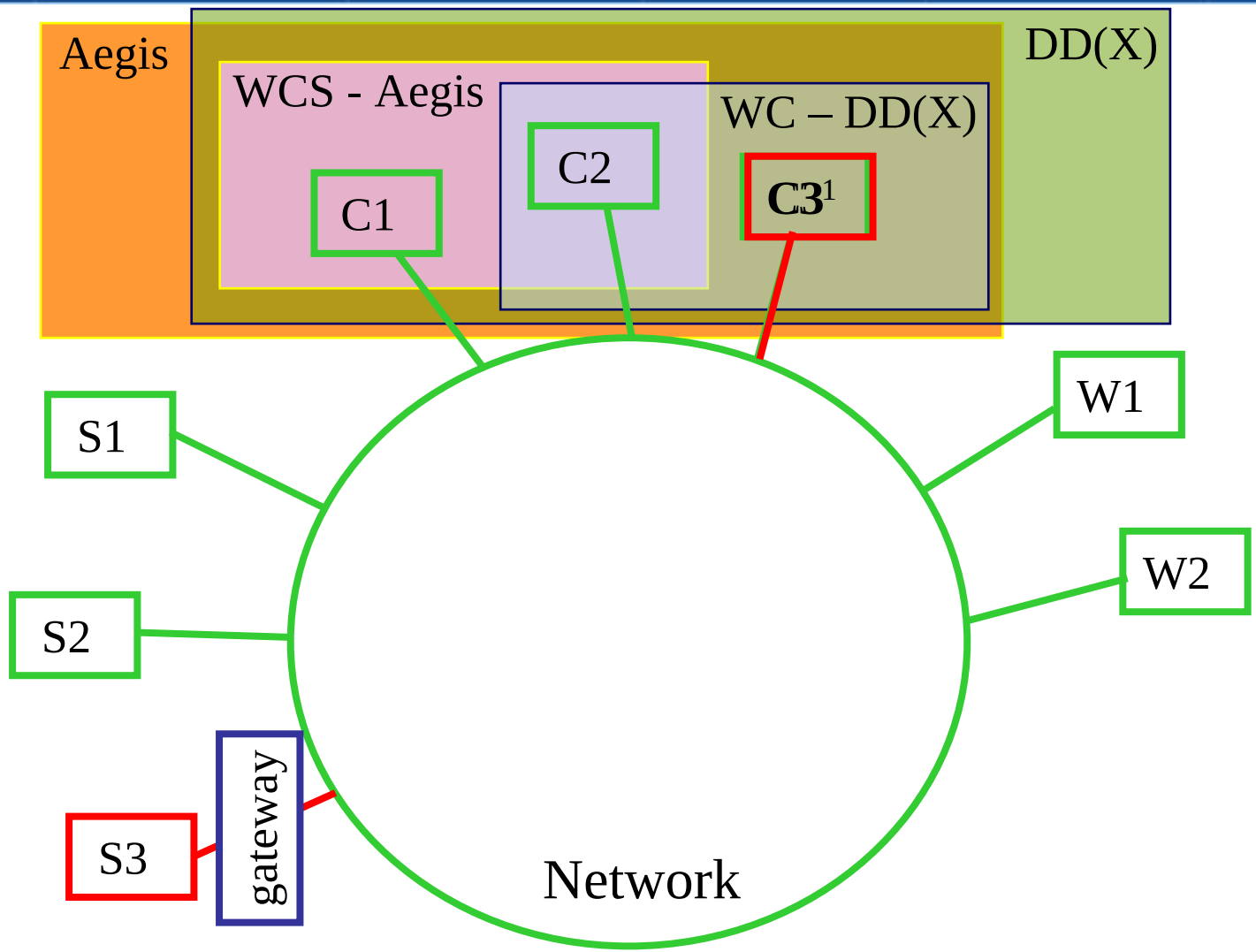
OA / FORCEnet Alignment

OA Category Criteria

- OA Category 3
  - Native Pub/Sub Combat System Networking
  - Fn Apps Can “Subscribe” to CS Network Data
- OA Category 4
  - Built on Component Architecture
  - Fn Becomes a Reusable CS Component

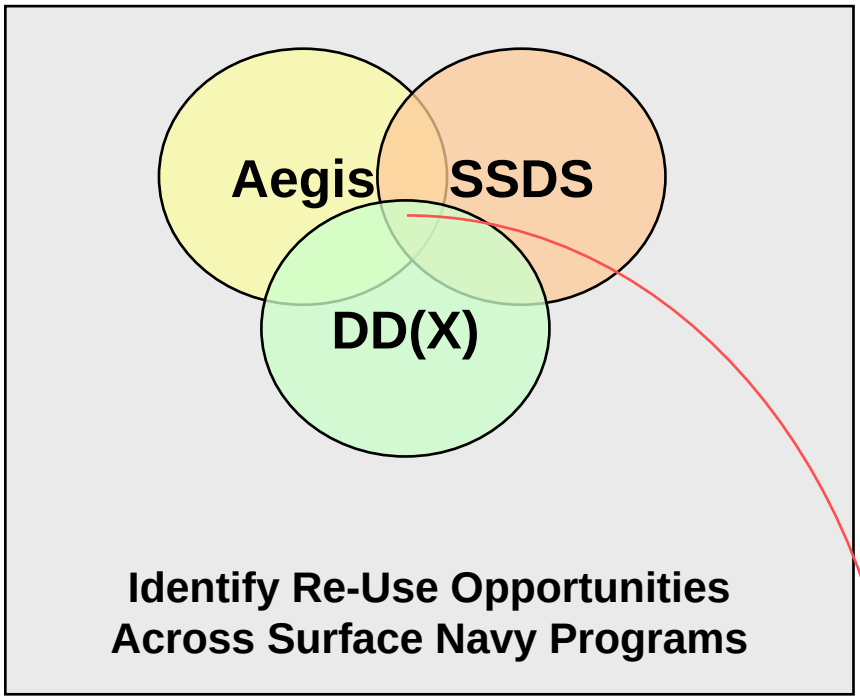
Simple C2 System

Logical / Physical View

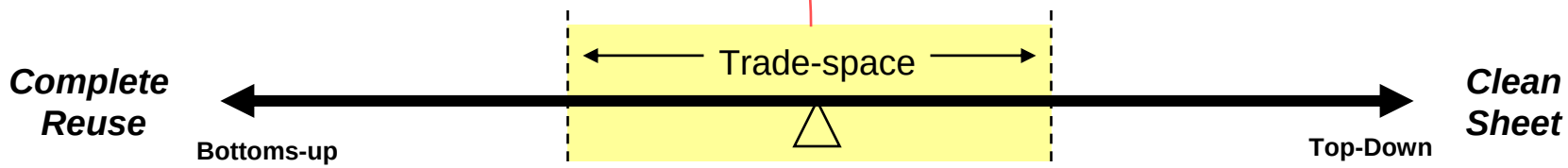


Surface Navy Standard C2 Initiative

Key Themes

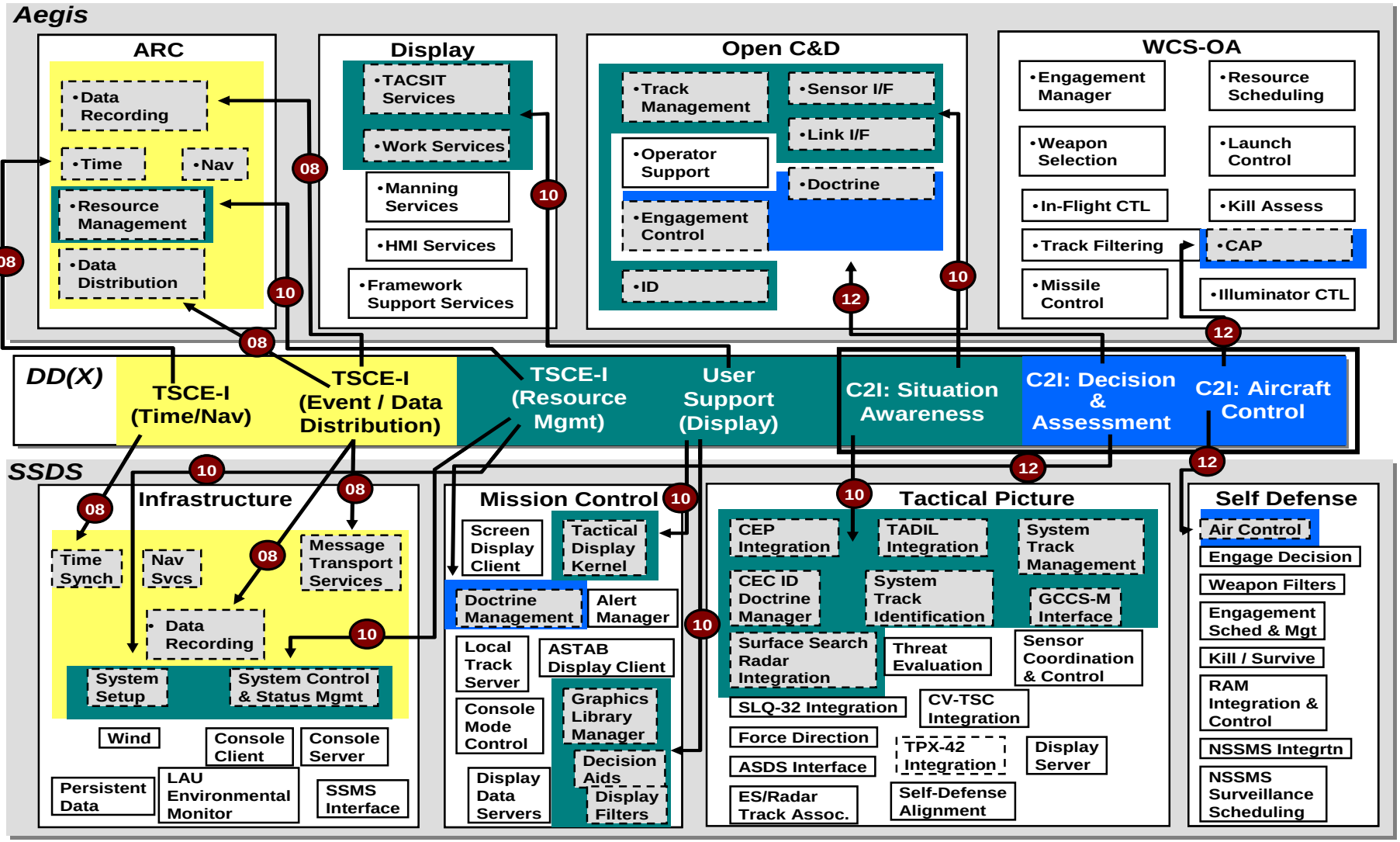


- Maximize Reuse of Aegis OA and SSDS Combat System Products
  - DD(X) is the Foundational Architecture
- Established a Common Capability Introduction Approach for In-service ships Aligned to DD(X) Releases
  - Completed Delivery of First Common Components (TSCE-I)
    - Rel 2 TSCEI in place for DD(X), Aegis OA and SSDS OA
    - Rel 3 TSCEI on plan for June SNSC2I delivery
- Introduce Candidate Technologies/Applications through Open Business Model



Industry Working Together To Maximize SNSC2 Re-Use

Planned Reuse of DD(X) into Aegis and SSDS



SNSC2 Capability 08 (in progress) | Capability 10 (Proposed) | Capability 12 (Proposed)

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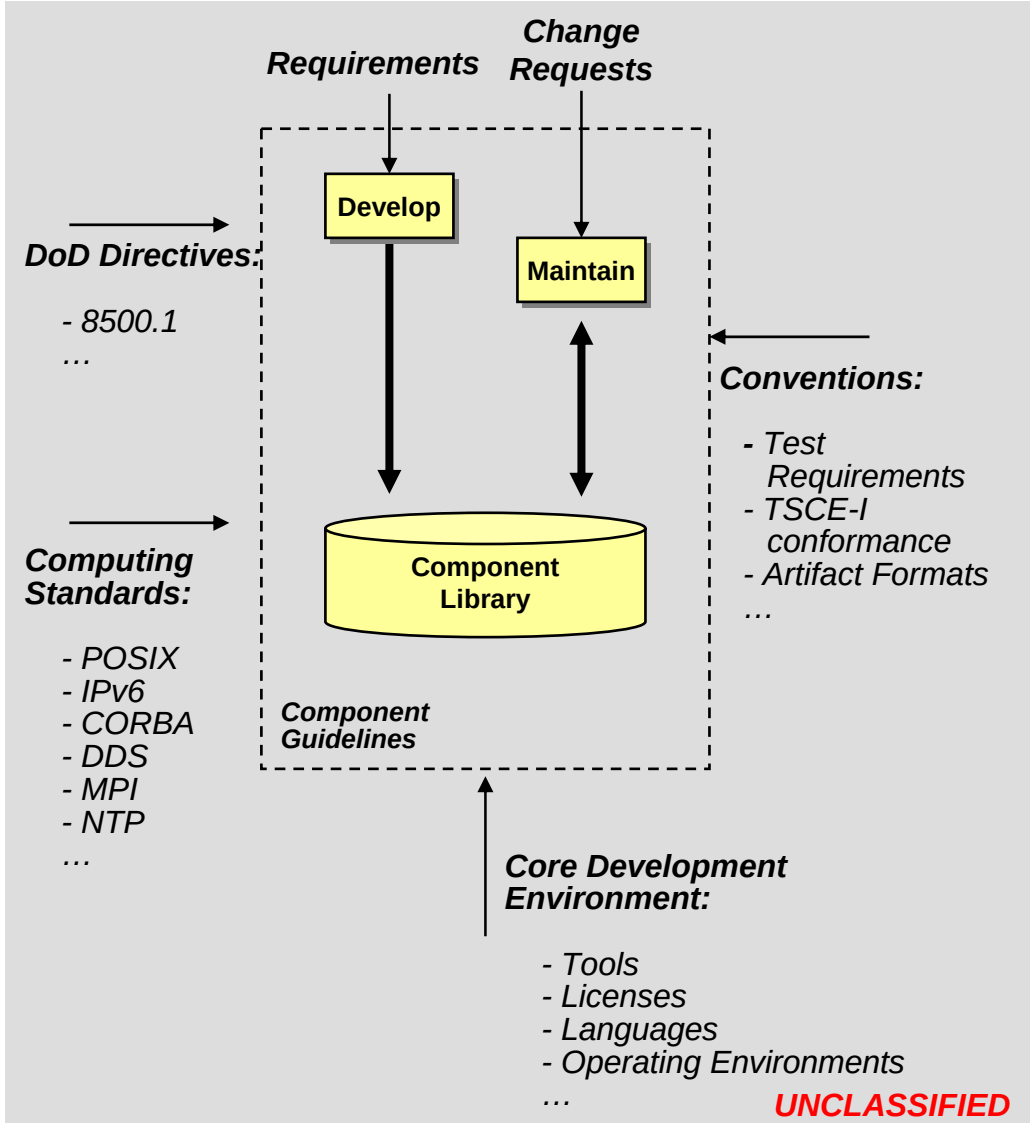
Surface Navy Standard C2

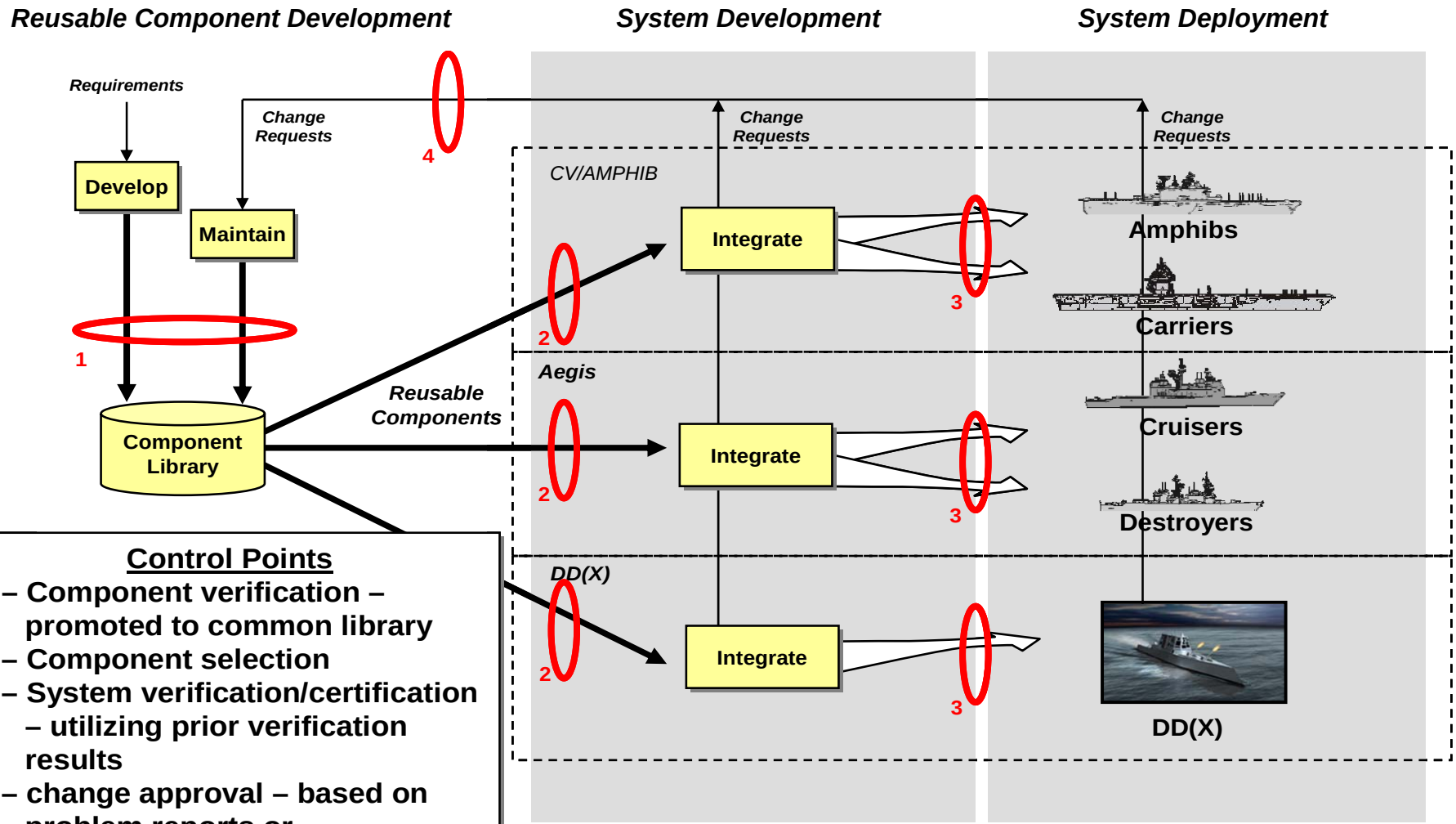
Component Development Guidelines



- Industry-Defined Set of Guidelines to be used by all Component Developers
  - Specific subset of current OACE guidance and standards documents
  - Standards, attributes and conventions used
- Guidelines/Conventions Ensure:
  - Maximum Flexibility – Latitude within the development community – (i.e., not overly-constrained)
  - Minimize Constraints / Barriers to entry to allow wide participation
  - Efficient communications among potential disparate communities

Surface Navy Standard C2

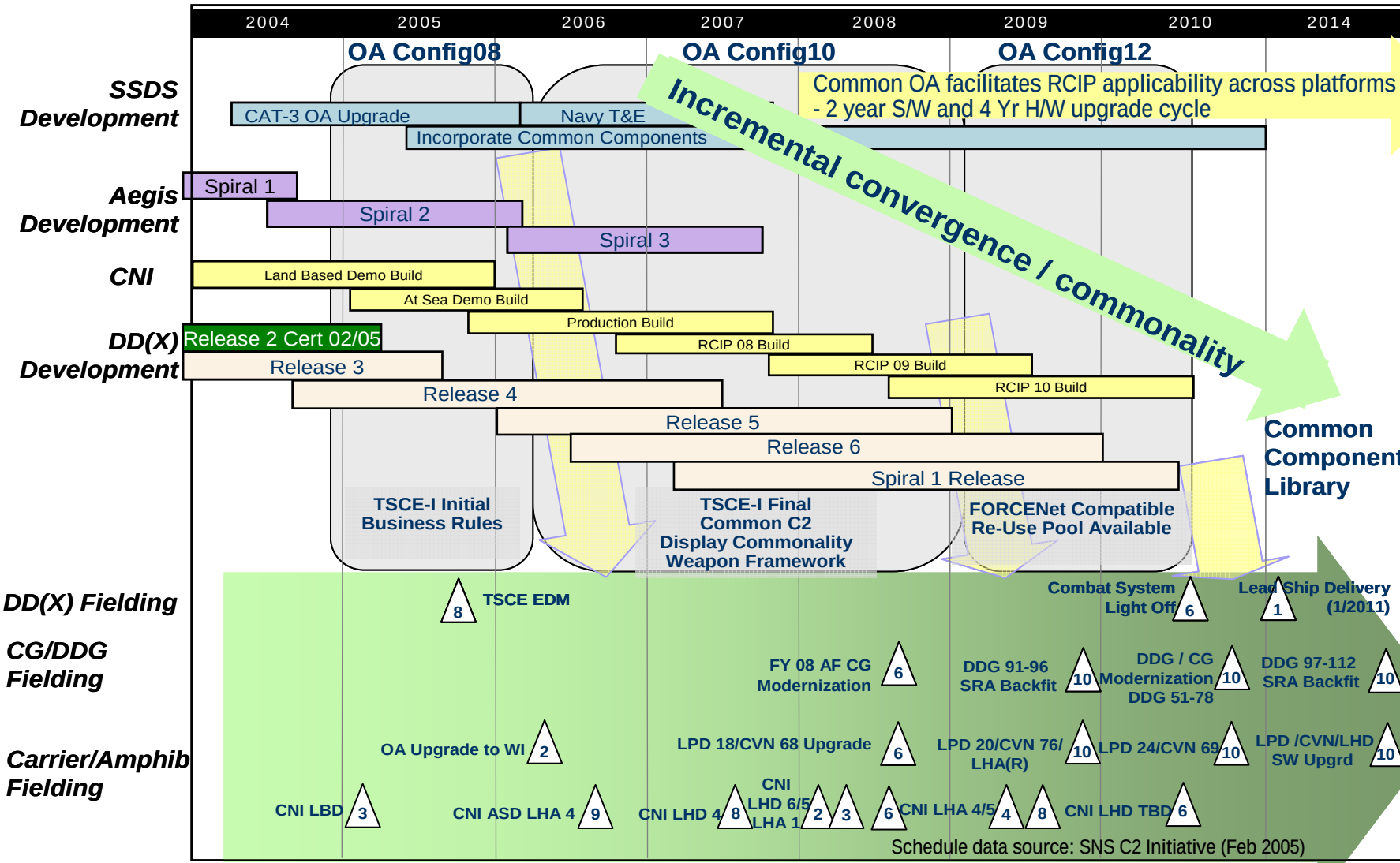
Component Control Points



Control Points

1 – Component verification – promoted to common library
2 – Component selection
3 – System verification/certification – utilizing prior verification results
4 – change approval – based on problem reports or enhancement requests

Surface Navy OA Strategic Vision



Summary

- Leveraging COTS Refresh to Implement OA
- Surface Navy Standard C2 / OA Strategy Dovetails with FORCEnet Precepts
- Common Component Library Necessary for Realization of Both OA Cat 4 and FORCEnet